

## CLAIMS

We claim:

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1. A method of screening drug candidates comprising:
    - a) providing a cell that expresses an expression profile gene encoding PAA3 or fragment thereof;
    - b) adding a drug candidate to said cell; and
    - c) determining the effect of said drug candidate on the expression of said expression profile gene.
  - 10 2. A method according to claim 1 wherein said determining comprises comparing the level of expression in the absence of said drug candidate to the level of expression in the presence of said drug candidate.
  - 15 3. A method of screening for a bioactive agent capable of binding to PAA3 or a fragment thereof, said method comprising:
    - a) combining said PAA3 or a fragment thereof and a candidate bioactive agent; and
    - b) determining the binding of said candidate agent to said PAA3 or a fragment thereof.
  - 20 4. A method for screening for a bioactive agent capable of modulating the activity of PAA3, said method comprising:
    - a) combining PAA3 and a candidate bioactive agent; and
    - b) determining the effect of said candidate agent on the bioactivity of PAA3.
  - 25 5. A method of evaluating the effect of a candidate prostate cancer and/or breast cancer drug comprising:
    - a) administering said drug to a patient;
    - b) removing a cell sample from said patient; and
    - c) determining the expression of a gene encoding PAA3 or fragment thereof.
  - 30 6. A method according to claim 5 further comprising comparing said expression profile to an expression profile of a healthy individual.
  7. A method of diagnosing prostate cancer or breast cancer comprising:
    - a) determining the expression of a gene encoding PAA3 or a fragment thereof in a first prostate or breast tissue of a first individual; and
    - b) comparing said expression of said gene(s) from a second normal colon tissue from said first individual or a second unaffected individual;

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wherein a difference in said expression indicates that the first individual has prostate cancer or breast cancer.

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8. An antibody which specifically binds to PAA3 or a fragment thereof.
  9. The antibody of Claim 8, wherein said antibody is a monoclonal antibody.
  10. The antibody of Claim 8, wherein said antibody is a humanized antibody.
  11. The antibody of Claim 8, wherein said antibody is an antibody fragment.
  12. The antibody of Claim 8, wherein said antibody modulates the bioactivity of PAA3.
  13. The antibody of Claim 12, wherein said antibody is capable of inhibiting the bioactivity or neutralizing the effect of PAA3.
  14. A method for screening for a bioactive agent capable of interfering with the binding of PAA3 or a fragment thereof and an antibody which binds to PAA3 or fragment thereof, said method comprising:
    - a) combining PAA3 or fragment thereof, a candidate bioactive agent and an antibody which binds to PAA3 or fragment thereof; and
    - b) determining the binding of PAA3 or fragment thereof and said antibody.
  15. A method according to Claim 14, wherein said antibody is capable of inhibiting or neutralizing the bioactivity of PAA3.
  16. A method for inhibiting the activity of PAA3, said method comprising binding an inhibitor to PAA3.
  17. A method according to claim 16 wherein said inhibitor is an antibody.
  18. A method of neutralizing the effect of PAA3 or a fragment thereof, comprising contacting an agent specific for said PAA3 or fragment thereof with said PAA3 or fragment thereof in an amount sufficient to effect neutralization.
  19. A method of treating prostate cancer or breast cancer comprising administering to a patient an inhibitor of PAA3.

20. A method according to claim 19 wherein said inhibitor is an antibody.

21. A method for localizing a therapeutic moiety to prostate cancer or breast cancer tissue comprising exposing said tissue to an antibody to PAA3 or fragment thereof conjugated to said therapeutic moiety.

5 22. The method of Claim 21, wherein said therapeutic moiety is a cytotoxic agent.

23. The method of Claim 21, wherein said therapeutic moiety is a radioisotope.

24. A method of treating prostate cancer or breast cancer comprising administering to an individual having said cancer an antibody to PAA3 or fragment thereof conjugated to a therapeutic moiety.

10 25. The method of Claim 24, wherein said therapeutic moiety is a cytotoxic agent.

26. The method of Claim 24, wherein said therapeutic moiety is a radioisotope.

27. A method for inhibiting prostate cancer or breast cancer in a cell, wherein said method comprises administering to a cell a composition comprising antisense molecules to a nucleic acid of figure 1 (SEQ ID NO:1).

15 28. A biochip comprising one or more nucleic acid segments encoding PAA3 or a fragment thereof, wherein said biochip comprises fewer than 1000 nucleic acid probes.

29. A method of eliciting an immune response in an individual, said method comprising administering to said individual a composition comprising PAA3 or a fragment thereof.

20 30. A method of eliciting an immune response in an individual, said method comprising administering to said individual a composition comprising a nucleic acid encoding PAA3 or a fragment thereof.

31. A method for determining the prognosis of an individual with prostate cancer or breast cancer comprising determining the level of PAA3 in a sample, wherein a high level of PAA3 indicates a poor prognosis.

25 32. A polypeptide having an amino acid sequence encoded by nucleotides 375 to 2795 of

Figure 1 (SEQ ID NO:1).

33. A polypeptide having the amino acid sequence as shown in Figure 2 (SEQ ID NO:2).

34. A polypeptide having an amino acid sequence that is at least 95% identical to the amino acid sequence set forth in Figure 2 (SEQ ID NO:2).

5 35. A composition comprising the polypeptide of claim 32, claim 33 or claim 34 and a pharmaceutically acceptable carrier.

36. A nucleic acid comprising the nucleic acid sequence of nucleotides 375 to 2795 of Figure 1 (SEQ ID NO:1).

10 37. A nucleic acid comprising the nucleic acid sequence as set forth in Figure 1 (SEQ ID NO:1).

38. A nucleic acid comprising a nucleic acid sequence encoding the polypeptide of claim 32, claim 33 or claim 34.

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